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To make up this deficiency in graminaceae, the Tuareg have recourse to products of gathering.

After a rain the captives and the Imrad women gather the seeds of certain plants which grow in the Ahaggar valleys. They are the afasso (Panicum turgidum F.) and the oulloul (Aristida pungens D.). But the size of the yield varies with the abundance of rain, and one may say that most of the time it is quite /233/ uncertain. This is not the case in the Sudan, where the Iklan gather whole bags of wild seeds, particularly cram-cram (Cenchrus echinatus), every year.

Fig. 31. Little leather flask used as a butter container.

To be sure, there are a few wild berries in the Ahaggar, such as those from the jujube tree (Zizyphus lotus D.) and the téborak (Balanites aegyptiaca). In case of famine the Tuareg fall back on other seeds, such as those of the colocynth, the Acacia tortillis, etc. However, all these plants play only a secondary role in the Tuareg diet.

The Tuareg have at their disposal milk from their camels, goats, and ewes. They drink it either whole or diluted with water, either fresh or sour.

The luxury of drinking whole milk is reserved for young mothers and children. Adults generally drink fresh milk morning and

have made them the base of their diet; for this reason they were nicknamed acridophages. The Nasamonians of Herodotus prepared them in the same way the Tuareg do, and the /236/ similar diets of the two peoples is perhaps not pure coincidence.

There are a few fish ponds in the Ahaggar, but the Imochar and the Imrad do not eat the flesh of these animals; only the Issekkemären catch barbels and sometimes catfish, or rather they gather them up in the wadis after floods, for they do not know how to fish, properly speaking.

The sedentary peoples raise chickens, but the Tuareg do not eat them either, since they consider the meat impure. The same interdict is extended to eggs. The only bird which is an exception is the ostrich. There are no longer any ostriches in the Sahara, but when the Ihaggaren go to the Sudan they capture them if they have the chance; in addition, they eat ostrich eggs cooked in the ashes.

Times of scarcity were sometimes experienced. They are rare now that caravans can circulate freely, but they were much more frequent when the state of war continued for a long time. The Tuareg fell back on wild plants which do not generally enter into their diet: the young growths of tahlé (Typha elephantina), the leaves of the tanekfit (Eruca aurea) and the aramas (Atriplex halimus), the underground stems of the danoun (Cistanche lutea) which resembles asparagus, and many other plants of very dubious food value, which they ate to assuage their hunger. The state of famine can become so pronounced that they sometimes gather up old bones, grind them up, reduce them to flour, and make gruels of them. It goes without saying that it is during these periods that pillaging is at its height. People steal from camp to camp, from tribe to tribe, and everyone forgets his brother and his friend, thinking of only one thing -- survival by any means.

the proportion of one to four. After several dry years some agricultural centers must be completely abandoned. This was the case of Tit, Attoklane, Tahart, Dar-Mouli, etc., in the last few years.

In 1940, 555 hectares of land were seeded. This is the figure for a good year, which can occasionally be surpassed but can also be reduced by more than half.

The population of the agricultural centers, which was 1, 310 people in 1916, was 2, 280 in 1938, which denotes a great effort made in favor of agriculture. This could be realized thanks only to the state of peace due to the French occupation.

Here are the figures for each of the principal centers, according to the archives of the Tamanrasset post (1):

1. Florimond report, 1938.

	1911	1938	
Tamanrasset	150	686	
Abalessa	272	250	
I-n-Amgel	180	206	
Iglen		168	
Ideles	70	160	
Tazerouk	150	148	
Tit	75	98	had to leave for other centers after the summer of 1938.
Tarhaouhaout	140	91	
Amsel	90	66	
Tahifet		39	
/248/ Tigeneouin	25	23	
Mertoutek		60	
Hirhafok		80	
Ilaman	10		

278 of trust. Every time they take a caravan down south, they purchase [439] many drugs, either for their personal use or to resell in their country or at In-Salah.

164 There are not many diseases in the Ahaggar. The country is relatively healthy because of its very dry climate /261/ and the bracing action of the sun, which at the same time destroys microbic germs. Moreover, this is very fortunate, for with the small amount of hygiene practiced by the Tuareg it would be impossible to fight disease. It may also be true that this absence of hygiene stems from the fact that the Tuareg have not had to see the necessity of it.

[165 731] The Ahaggar people die of old age or of war wounds. Of course, there are sometimes epidemics capable of doing damage, but they are rare because of the isolation of the camps. The great distances which separate one from the other are a natural defense against mass contagions. These epidemics always come through the medium [361] of the caravaneers or the people who return from the Sudan, where they have stayed among sedentary people. We may mention smallpox, very common in the Sudan, which sometimes works great ravages in the tribes. Typhus, spread by lice, may decimate a whole tribe in a few days, and it is not uncommon among the Tuareg. But these two diseases are the exception when they are reported in [751] the Ahaggar. When a man returning from the Sudan is stricken with one of them, his case is reported by messengers long before his arrival, and the sick man is systematically isolated.

753 The Tuareg under the circumstances recognize the state of contagion, but they do not see the causes of disease. According to [771] them, it is caused by the action of bad genii. As good Moslems, they pretend not to believe in these genii, but in reality most of the talismans they wear on their persons are intended to protect them from these. To obtain them, they go to the marabouts or to men [756] with a reputation for their knowledge of the occult sciences; these sorcerers are known as amekellé6u.

162 /109 cont./ here the cause of the greater proportion of men
165 to women.

847 The most widespread disease in the Ahaggar is undoubted-
ly malaria, most often contracted in Sudanese territory and
164 spread in the Ahaggar, where anopheles are numerous in the agricultural centers and at all the permanent or temporary water points. Professor Rémy of the faculty at Nancy has found them in the Tarahouaout tiggert /outflow of water/, at the In-Ezzebib guelta /pool/; the doctor, Captain Galan, has collected them in the Afilal guelta at an altitude of nearly 2, 000 meters.

Pneumonia and its pulmonary complications wreak the most havoc among the Tuareg; this is due to the winter cold, which is ill borne in too thin clothes.

[131] In 1949 an epidemic of measles took on the aspect of a catastrophe through its pulmonary consequences.

Venereal diseases are very common among the harratin, rarer among the Tuareg.

A distressing disease of the agricultural centers is trachoma, aggravated by every type of conjunctivitis transmitted by the flies that swarm and cluster around the /110/ eyes of children. The Tuareg seem immune to diseases of the eyes; they rarely have trachoma.

Smallpox, once so common and so feared, has practically disappeared, thanks to systematic vaccination. It was an unusual event to see two Tuareg return from the Sudan in April, 1951 covered with smallpox eruptions.

Tuberculosis does not seem to have appeared; skin tests made at the Tamanrasset school are negative for children born in the Ahaggar. There seems to be no manifestation of cancer.

Although the Tuareg are abundantly provided with lice, above all in the winter, as are the harratin, a case of typhus has never been known. Typhoid is unknown, as are diphtheria, tetanus, and poliomyelitis.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

Introduction

This book is the result of several years' study of North African pastoralism. My interest in this subject began under climatic conditions rather different from those of North Africa. In the winter 1945–46 I journied on skis through Northern Sweden, Finland, and the Norwegian Finmark. For about three months I lived among the Lapps, and, watching the techniques of reindeer-breeding, I became very interested in the problems connected with the history and evolution of stock-breeding. Shortly after my return from this trip I began to study anthropology in the University of Copenhagen under Dr. Kaj Birket-Smith, and as the main subject of the degree of M.Sc. acquired in summer 1950, I chose pastoral cultures of the Near and Middle East. I had already then made two short journeys to North Africa.

(1) In summer 1947 I spent about three months in Central Algeria to investigate Arab nomads in the steppes of the High Plateau and the adjacent parts of the Sahara. I travelled around the towns of Djelfa, Zenina, Aflu, Laghwat, and Ghardaya. I had little money at my disposal and could never afford to engage native assistants or to have a horse or a mule for riding and transportation. I walked through the barren steppes and deserts carrying as my main luggage several bottles filled with water. This journey was certainly not easy, and at its end I suffered very badly from malaria. Nevertheless, I managed to get into contact with camps of nomadic tribes such as the *Ulad Nail*, the *Larba*, and the *Sait Otba*, and for shorter periods I followed them during their migrations towards the south. I also contacted certain semi-nomadic tribes living around Aflu in Djebel Amour of the Sahara Atlas. I did not, however, understand Arabic, and the nomads, who were rather shy and suspicious of Europeans, generally had no knowledge of French. It is evidently most difficult to collect ethnographical material under such circumstances. And if I had not received the very kind assistance of French administrators and officers, of native Arab caids, and of Arabs who had formerly served in the French Army, I should indeed have acquired nothing. The year 1947 followed upon a long period of drought which had caused severe losses to all nomads. Many of them had lost all their livestock, and famine occurred all over pastoral Algeria. The consequences of the drought when at its worst can be illustrated by the following example:— Arriving at Aflu in the Djebel Amour, I discovered a small camp the tents of which appurently belonged to a type constructionally different from those used among Central Algerian nomads. I went to the camp where I was told that it belonged to semi-nomads of the *Adjaletes* and *Ulad Sidi Brahim* tribes. They all suffered extremely from famine, and entering the first tent I found three dying children under filthy rugs. I now concentrated upon the problems connected with this dreadful disaster which seemed to prove the insufficiency of pure pastoralism in the barren countries of North Africa.

[p. 1]

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

their flocks, but it is, on the whole, inproper to show any interest in their animals. Some nomads will even claim that although they know all their goats by sight, they do not know, or never mention, the total number of their animals, as this is believed to bring bad luck. This belief is probably explained by the idea of the evil eye. To this may be added that it is difficult to judge the ownership of goats by merely watching the flock of a household which may also have animals grazing on other pastures.

According to official statistics for 1948, the average number of goats per household among the *Kel Ahaggar* is fifteen (Capot-Rey 1953a, p. 265). This figure is probably derived from the tax lists, and it seems to be much too low – even when households of slaves and sedentary agriculturists are included. Lhote has stated that the number of goats per person, under ideal conditions, is 35–40. If they increase above this, the surplus is slaughtered or sold to the sedentary peoples of the oases (Lhote 1951a, p. 9). This latter figure for ownership of goats under ideal conditions is probably true for the more wealthy Tuareg of Ahaggar. Thus among the vassal Tuareg of the *Dag Ɣali* tribe many household are said to possess 100–200 goats, but this tribe is considered extremely rich in goats, and households of other tribes will not generally own so many animals. From rough calculations made in a great many camps of vassal Tuareg, and Tuareg of the *Isekkemaren* class, I estimate that households on an average possess 60–70 goats when pastures are not too badly developed, for it must be emphasized that the size of flocks changes with climatic conditions. For the sedentary agriculturists of Ahaggar I estimate, on the basis of calculations made at Amsel, Abalessa, and Taṛhawhawt, that a household possesses on average 15–20 goats.

In good years the amount of milk products supplied by a flock of 60 goats is rather considerable. This is clear when we consider the fact that a goat, during the period of three to four months in autumn and early winter when pasture of annual plants is green, will yield up to two litres of milk every day. When annual pasture gets dry the milk yield decreases but milk is still comparatively plentiful and important for food all the winter. In summer, however, there is little milk for reasons already referred to, and in dry years goats, even in the cold season, yield little or no milk. The flocks decrease during such periods of drought and some nomads may even lose most of their animals. During my stay among the Tuareg of Ahnet and Ahaggar from November 1954 to April 1955, goats suffered much from lack of fodder. In many camps one or two goats died of hunger every day.

The Ahaggar Tuareg cannot subsist entirely on goat-breeding because severe droughts occur frequently in their country. During drought-periods the goats are so to speak valueless as subsistence for the nomads. But it is remarkable that goats emaciated in consequence of severe drought quickly grow fat and start to yield milk once rain has fallen abundantly enough for the regeneration of pastures. In connection with this we shall point to another characteristic of goat-breeding: The animals have a very short gestation period, and the kids are fully grown for mating in one year. And as one goat may have four kids annually with free mating, a household, which has lost most animals during a drought, will be able very quickly to re-establish a flock large enough for its needs.

Goats are also highly important for the subsistence of the pastoral Tuareg of Ayr. I do not know of any statistic material about the size of flocks in this area, but for Tuareg of Kidal (Aḍraṛ-n-Foṛas) flocks are officially estimated at 74 goats and sheep per household (Capot-Rey 1953a, p. 269), and this region is environmentally related to Southern Ayr. The *Kel Ferwan* Tuareg say that a household

[Text continues on p. 45]

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

Each of the three vegetational zones of Ahaggar has its advantages and disadvantages. If we consider a good year when rain has fallen abundantly with a resultant regeneration of all fodder plants, the *Atakor* zone has very excellent pasture. For the plains and the stony mountain slopes are then entirely covered with annual plants which by the Tuareg are considered the very best fodder. The Tuareg also claim that the upper mountain zone is preferable because of its cooler climate, which has a beneficial influence on the lactation of domestic animals. The disadvantage of the *Atakor* zone is the lack of acacias to which can be added the scarcity of fuel. The *Tarayin* zone possess characteristics of the *Atakor* zone and of the *Abada* zone. The *Abada* country is botanically very different from *Atakor*. It has annual pastures of great value when abundant rainfall has been experimented and it also has valuable pastures of perennial plants. With heavy rain the *Abada* country is excellent for stock-breeding, and fuel can be found everywhere. But the Abada country is hotter than are the zones of *Tarayin* and *Atakor*.

If rain falls abundantly all over Ahaggar there is good pasture in all three zones. But rainfall is more frequent and heavier at high altitudes than in the *Abada* zone, so that *Atakor* normally has by far the best pasture of annual plants which spring up late in summer or in autumn. The *Abada* zone on the other hand has the very best pasture of perennial plants, notably acacias that grow around the lower parts of the valleys which are always flooded when it rains in the high mountains.

The fluctuations of plant development determine the nomadic migrations of the Ahaggar Tuareg. A few tribes have their normal grazing grounds in *Atakor* (e.g., the *Dag Rali* and the *Kel Tazulet*). They camp in this zone at most seasons to let their goats and sheep feed on fresh and dry annual pasture. In dry years and during the hot summer season they may move to the *Tarayin* zone where there are perennial fodder plants, but they rarely camp in the *Abada* country. Many tribes have their normal grazing grounds in the *Abada* zone (e.g., the *Aguh-en-tehlé*, the *Ayt Lowayen*, the *Iheyawen Hada*, and the *Kel Rela*), but move to the *Atakor* when annual pasture is good in this region. They live in *Atakor* with tents and flocks when annual plants are green, while the rest of the year they camp in the *Abada* country to let their animals feed on acacias and other perennial species. Finally there are two tribes (*Tégehé-n-Efis* and *Iklan-en-tawsit*), the members of which camp in the *Abada* country all the year round even when rich annual pasture is found in *Atakor*. However, members of these tribes may send their camel herds to the *Atakor* zone, accompanied by herdsmen, while tents and flocks remain in the lower country.

With the exception of a few noble households which keep up their old tradition to subsist largely on camel's milk, the Ahaggar Tuareg do not keep their she-camels in Ahaggar unless there are excellent pastures of annual plants in this area. They take their camels to pastures far away from Ahaggar, notably to the Tamesna region where they have their animals guarded by herdsmen who are frequently slaves. In very dry years there are very few camels in Ahaggar – just the animals needed for riding and transportation. It is in fact very easy to take camels to distant pastures, and it is most necessary to give these animals the utmost care as they are most valuable and their breeding is a very slow process (cf. p. 56). Goats do not need such excellent fodder as do camels. They can eat almost everything, but in dry years goats may also suffer severely from lack of suitable fodder. This was the case in the year 1954/55 when I stayed in Ahnet and in Ahaggar. In the small camps of three to four tents each it was

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

normal every day to loose one or two goats which died of hunger. The goats were too thin to be mated, and even in winter there was no milk, or so little, that it was all consumed by small children. In spite of these very severe conditions most Ahaggar Tuareg stayed in Ahaggar with their flocks which subsisted on dry perennial plants and annual plants that were two years old. Conditions were extremely bad in the region of Ahnet, and about half of the Ahnet Tuareg left their country to go southwards with their camps and goats, to the regions of Ti-n-ṭawaten. In severe drought periods some Tuareg may move their camps far outside of Ahaggar, but even then most of them will remain in their native country for extensive goat migrations are difficult and cannot be realized without a loss of the meagre animals. Most Tuareg therefore prefer to remain and to avoid the strenuous journey connected with these migrations. They may loose many animals during a drought, but they know that sooner or later rainfall will occur so that pastures will regenerate quickly to let the animals grow fat to yield milk and to be mated. The increment of goats is extremely quick in comparison with that of camels.

Stock-breeding conditions are on the whole not very favourable in Ahaggar, but pastoral Tuareg of this region have developed an economic system which secures their existence even in very bad years of extreme drought.

In the introductory description of Tuareg environment it was stated that the Ayr Massif and the surrounding plains have far better possibilities of stock-breeding than Northern Tuareg countries. The broad river valleys of Ayr are very rich in persistent plants which also grow on slopes and in depressions outside the valleys, and the spring of annual pastures is an annually recurrent event. One informant told me that there had not been any drought in the Agadez region throughout the many years the French had reigned over Ayr. At an unknown date in the past, it is said, a very severe drought persisted in the country for a period of seven years, and the Tuareg who had many goats and sheep fed these animals on charcoal. Since then rain has fallen every year and though more

Fig. 96. Tuareg feeding his riding camel with boiled tea leaves which are considered excellent fodder for camels. Ahaggar, the *Dag Rali* tribe.